

## CLAIMS

1. Power supply system for an industrial robot (1), comprising a transmitting part (11) including a first coil (14) and a first converter (13) for producing an alternating magnetic field from the first coil, and a receiving part (12) comprising a second coil (15) for providing an alternating current by induction from the alternating magnetic field and a second converter (16) for producing from the alternating current a direct current for providing power to a tool (8) carried by the robot, characterized in that the transmission part (11) is attached to the industrial robot (1), that the receiving part (12) is attached to the tool (8), that the transmitting part (11) comprises a tunable resonance electric circuit (13, 14), and that the second coil (15) is detachable from the first coil (14).
2. Power supply system according to claim 1, wherein the first coil (14) and the second coil (15) are arranged coaxially.
3. Power supply system according to claim 1, wherein the first coil (14) and the second coil (15) are arranged in parallel planes.
4. Power supply system according to claim 1 or 2, wherein the first coil (14) and the second coil (15) comprises a ring-shaped form.
5. Power supply system according to any of the preceding claims, wherein the first coil (14) and the second coil (15) comprises a printed circuit board.
6. Power supply system according to any of the preceding claims, wherein the second coil (19) comprises a core (20) of magnetizable material.
7. Power supply system according to any of the preceding claims, wherein any of the first converter (13) and the second converter (16) comprises a control unit containing a microprocessor (17) and memory means (18).
8. Method for supplying power to a tool (8) carried by an industrial robot (1), wherein a direct current is provided to a transmitting part of a power supply system (10) comprising a first coil (14) and a first converter (13), the direct current is converted by the first converter (13) and the first coil (14) for producing an alternating magnetic field, a second coil (15) of a receiving part (12) of the power supply system is arranged to produce by induction an alternating cur-

rent from the magnetic field, and the alternating current is converted into a direct current by a second converter (16) of the receiving part of the power supply system **characterized in**, attaching the first coil (14) to the industrial robot, attaching the second coil (15) to the tool (8) and detachable from the first coil, and arranging the first coil (13) and the first converter (13) in a resonance circuit, thereby increasing the current in the first coil thus producing an increased magnetic field.

9. Method according to claim 8, wherein the resonance circuit comprises an adjustable resonance circuit in order to account for variations in the impedance of the circuit due to incompleteness of the alignment of the first coil and second coil.
10. Industrial robot (1) **characterized in**, that the robot comprises a power supply system according to any of the claims 1 - 7.
11. Computer program product comprising instructions for affect a processor to perform the method according to any of claim 8 or 9.
12. Computer program product according to claim 11 provided at least in part over a network such as the Internet.
13. A computer readable medium containing a computer program product according to claim 11.